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EXAMINER

SAINT SURIN, JACQUES M

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/581,486	Applicant(s) ASAFUSA ET AL.	
	Examiner J M. SAINT SURIN	Art Unit 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 16, 17, 19 and 20 is/are rejected.
- 7) ☒ Claim(s) 14-15 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-20 are have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-13, 16-17 and 19-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Phillips (US Patent 6,213,947).

Regarding claims 1 and 11, Phillips discloses an ultrasonic diagnostic apparatus (col. 1, lines 12-16) comprising a probe (12) which transmits and receives ultrasonic waves to and from an object (to be inspected,

a transmission means (20a-20b) which outputs transmission signals for driving the probe (12)

a reception means (18) which processes reception signals received by the probe (12), and an image reconstruction means (28, 30) which reconstructs an ultrasonic image using the reception signals outputted by the reception means (18), wherein the transmission means creates and outputs the transmission signals corresponding to a composite modulation code sequence composed from two or more modulation code sequences (col. 3, lines 57-66, col. 4, lines), and the reception means is provided with

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a demodulator which demodulates the modulation based on the composite modulation code sequence for the reception signals (col. 4, lines 29-.38).

Regarding claim 11, it is rejected for the reasons set forth for that claim.

Furthermore, Phillips discloses FIGS. 3a, 3b, 3c and 3d are graphs of a conventional tissue second harmonic signal associated with the transmit pulse of FIG. 2a, a tissue second harmonic signal associated with the transmit pulse of FIG. 2b, tissue signal phase and tissue signal instantaneous frequency, respectively. (col. 2, lines 30-36 and col. 4, lines 10-21).

Regarding claims 2 and 12, Philips discloses the ultrasonic diagnostic apparatus according to claim 1, wherein the transmission means generates the transmission signals by successively outputting waveforms on the basis of coefficients of code elements of the composite modulation code sequence (col. 3, lines 55-66).

Regarding claims 3 and 13, Phillips discloses the ultrasonic diagnostic apparatus according to claim 1 or 2, wherein the composite modulation code sequence is a composite modulation code sequence composed from a first modulation code sequence and a second modulation code sequence (col. 3, lines 57-58), the demodulator comprises a first demodulator for demodulating the modulation based on the first modulation code sequence, and a second demodulator for demodulating the modulation based on the second modulation code sequence (col. 4, lines 29-34) and the reception signals outputted by the probe are demodulated by one of the first and second demodulators, and then further demodulated by the other demodulator (col. 4, lines 35-42).

Regarding claims 4 and 19, Phillips discloses the ultrasonic diagnostic apparatus wherein the code interval of the first modulation code sequence is larger than the code interval of the second modulation code sequence (col. 4, lines 4-10), and the first demodulator and the second demodulator have such a configuration that the reception signals outputted from the probe should be demodulated by the first demodulator and then demodulated by the second demodulator (col. 4, lines 29-38).

Regarding claims 5 and 20, Phillips discloses the ultrasonic diagnostic apparatus according to claim 3, wherein the probe (12) comprises multiple oscillators, the reception signals are outputted from each of the multiple oscillators (60a, 60b), the reception means comprises a phasing addition means which performs phasing of the reception signals outputted from each oscillator and adds them, the first demodulator is disposed at a position for demodulating the reception signals before phasing addition thereof performed in the phasing addition means, and the second demodulator is disposed at a position for demodulating the reception signals after phasing addition in the phasing addition means (see Fig. 20 and col. 28, lines 21-32)

Regarding claims 6-7, Phillips discloses the ultrasonic diagnostic apparatus according to claim 3, wherein the probe comprises multiple oscillators (60a, 60b), the reception signals are outputted from each of the multiple oscillators, the reception means comprises a phasing addition means which performs phasing of the reception signals outputted from each oscillator and adds them (col. 28, lines 21-32), and both the first and second demodulators are disposed at a position for demodulating the

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reception signals after phasing addition in the phasing addition means (col. 4, lines 29-40) and Fig. 20).

Regarding claim 8, Phillips discloses the ultrasonic diagnostic apparatus according to claim 3, wherein the code length of the second modulation code sequence is equivalent to or shorter than the code interval of the code elements constituting the first modulation code sequence, and coefficients of the code elements constituting the composite modulation code sequence are obtained by multiplying coefficient of each code element of the first modulation code sequence and each coefficient of the code elements constituting the second modulation code sequence.

Regarding claims 9-10, Phillips discloses the ultrasonic diagnostic apparatus according to claim 1, wherein the transmission means comprises a code storage means in which coefficients of multiple kinds of modulation code sequences are stored beforehand, a selection means which selects two or more modulation code sequences from those stored in the code storage means, and a composing means which composes the two or more modulation code sequences with adjusting the coefficients of them to desired code intervals to generate a composite modulation code sequence (col. 4, lines 51-62 and col. 18, lines -62).

Regarding claim 16, Phillips discloses the ultrasonic diagnostic apparatus according to claim 11 or 12, wherein the reception means comprises a filter for eliminating fundamental wave components from the reception signals demodulated by the first and second demodulators (col.2, lines 36-43).

Regarding claim 17, Phillips discloses the ultrasonic diagnostic apparatus according to claim 11 or 12, wherein the transmission means outputs waveform signals of the composite modulation code sequence and waveform signals of another composite modulation code sequence in which the phase shift amounts of the code elements of the composite modulation code sequence are each further shifted by a predetermined amount of phase, and the reception means has a reception signal composing means which offsets fundamental wave components by composing reception signals of waveform signals first outputted among the transmission signals of two of the composite modulation code sequences with reception signals of waveform signals outputted afterward (col. 15, lines 50-66).

Allowable Subject Matter

4. Claims 14-15 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
5. The following is a statement of reasons for the indication of allowable subject matter. The prior art of record does not disclose "the ultrasonic diagnostic apparatus according to claim 13, wherein the coefficients of the code elements of the first and second modulation code sequences are two values of +1 and -1, and the phase shift amounts as the values of the code elements of the composite modulation code sequence are phase shift amounts corresponding to degrees of multiplied -1 in multiplication of the first and second modulation code elements" as recited in claim 14

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to J M. SAINT SURIN whose telephone number is (571)272-2206. The examiner can normally be reached on Mondays to Fridays between 9:30 A.M and 6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron L. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jacques M SAINT SURIN/
Examiner, Art Unit 2856